Mapping Resilience for a Transdisciplinary Research Conceptualization
An AI-Augmented Semi-Systematic Review of 50 Years of Resilience Literature

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BACKGROUND AND PROBLEM

Resilience is **an increasingly common** research topic across disciplines, but it is often conceptualized or applied differently.

This leads to **difficulties d**efining, planning, emphasizing, and measuring components of resilience.

Prior work attempting to synthesize resilience research is **constrained** by scope or discipline.

PURPOSE OF PROJECT

1 **Address prior gaps** using AI-augmented approaches to review content of 50 years of multidisciplinary resilience research

2 **Provide a methodological blueprint** for large-scale literature reviews and text analyses using AI-augmented processes

3 **Help all resilience researchers** make sense of existing resilience conceptualizations to make more informed research choices

RESEARCH QUESTIONS

1. How is resilience conceptualized across the research repository?
2. What core disciplines have shaped resilience research holistically?
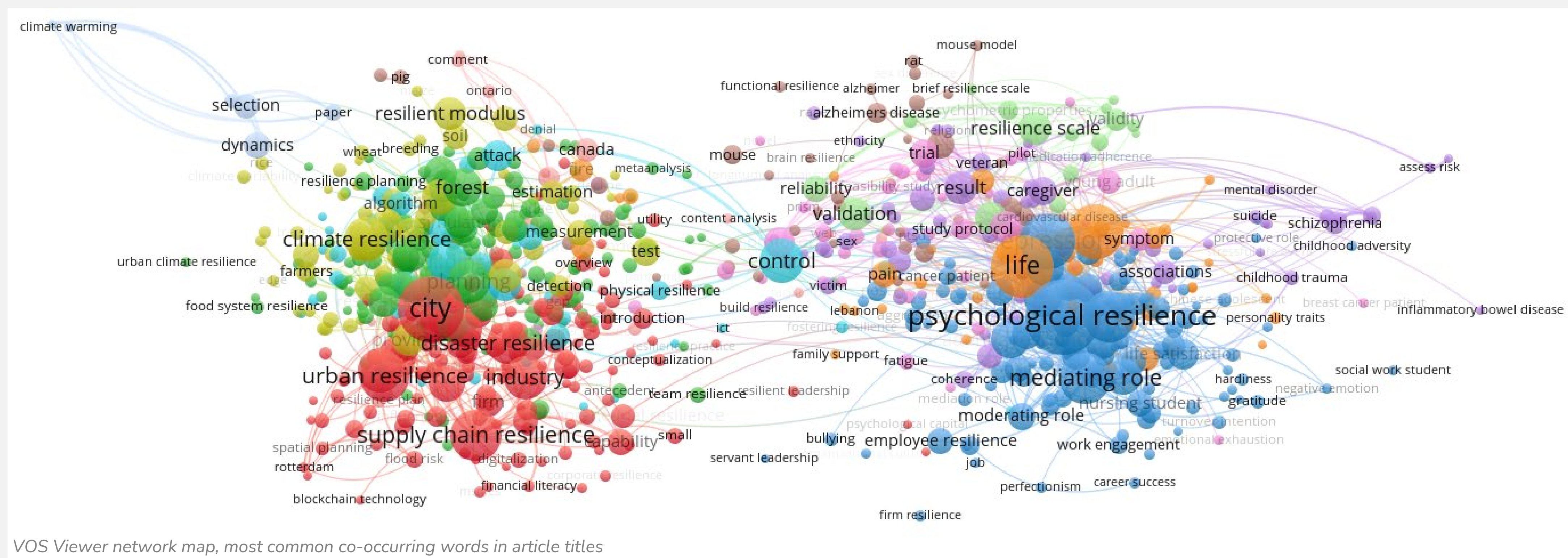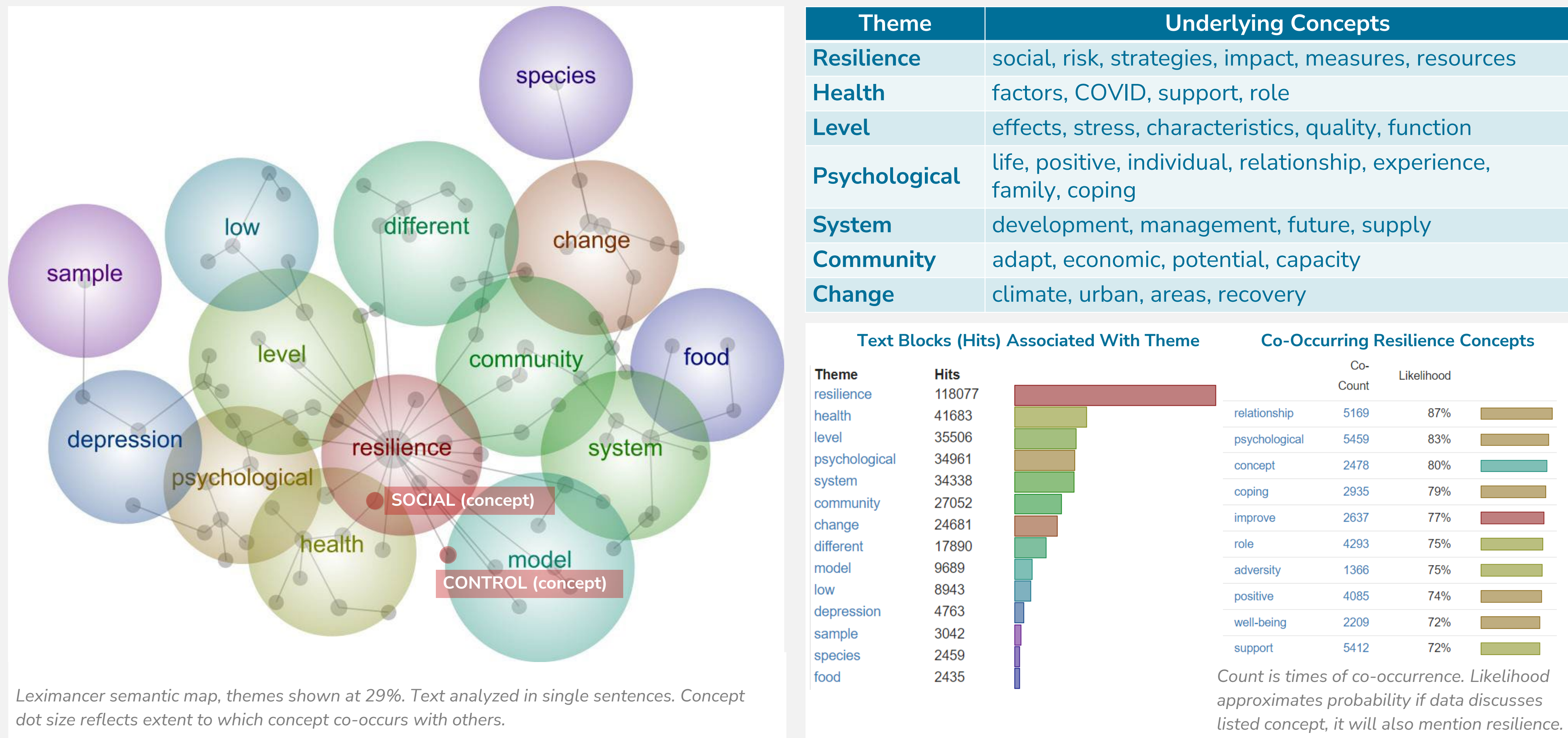3. How have production volume and topical focus change over time?

METHODS AND APPROACHES

Three phases augmented by AI/semi-automated tools
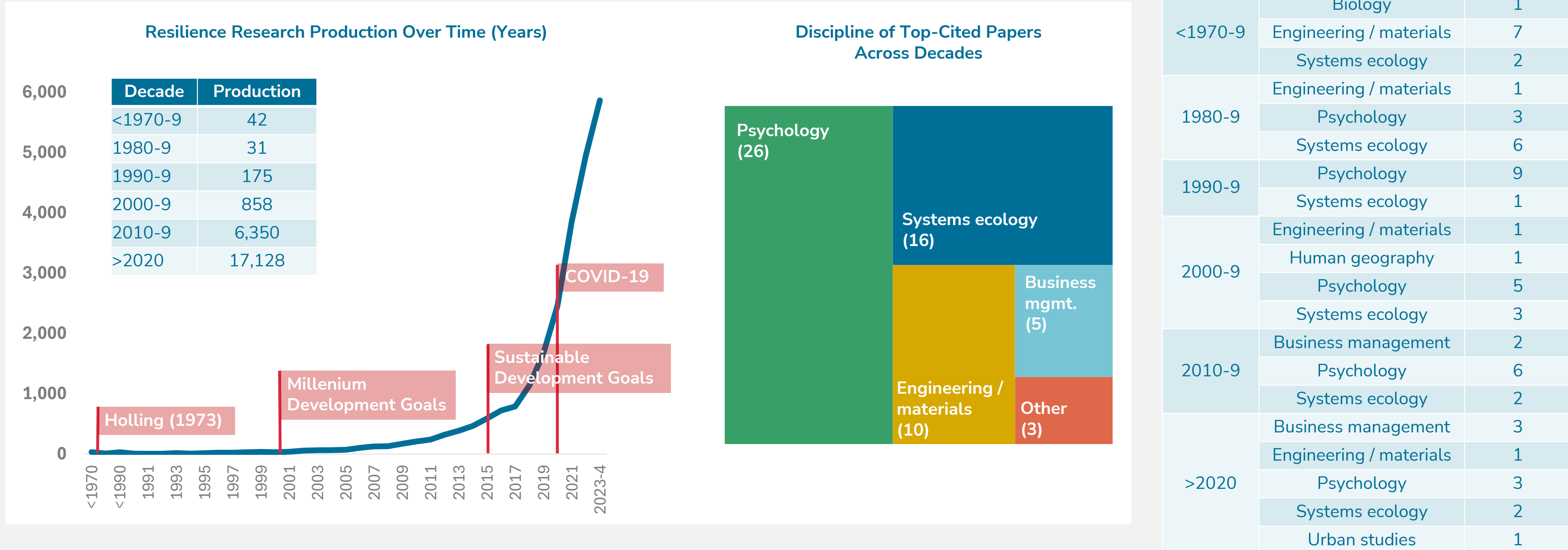Data retrieval > Data cleaning > Data analysis

Tools, programs, and applications used
- Database (Crossref completed; OpenAlex, Scopus in progress) API interfaces *(customized search queries)*
- VOS Viewer *(algorithmic network mapping)*
- Leximancer *(unsupervised machine-learning semantic text mapping)*
- Python applications *(text/file cleaning, sorting)*

Data summary
- Journal articles in English, 1973 – present, with *resilien** in title and abstract
- 24,763 abstracts retrieved with Crossref API

SEMANTIC CONCEPT AND NETWORK MAPS OF RESILIENCE

Leximancer semantic map, themes shown at 29%. Text analyzed in single sentences. Concept dot size reflects extent to which concept co-occurs with others.

Theme	Underlying Concepts
Resilience	social, risk, strategies, impact, measures, resources
Health	factors, COVID, support, role
Level	effects, stress, characteristics, quality, function
Psychological	life, positive, individual, relationship, experience, family, coping
System	development, management, future, supply
Community	adapt, economic, potential, capacity
Change	climate, urban, areas, recovery

Text Blocks (Hits) Associated With Theme

Theme	Hits
resilience	118077
health	41683
level	35506
psychological	34961
system	34338
community	27052
change	24681
different	17890
model	9689
low	8943
depression	4763
sample	3042
species	2459
food	2435

Co-Occurring Resilience Concepts

	Co-Count	Likelihood
relationship	5169	87%
psychological	5459	83%
concept	2478	80%
coping	2935	79%
improve	2637	77%
role	4293	75%
adversity	1366	75%
positive	4085	74%
well-being	2209	72%
support	5412	72%

Count is times of co-occurrence. Likelihood approximates probability if data discusses listed concept, it will also mention resilience.

VOS Viewer network map, most common co-occurring words in article titles

RESILIENCE ACROSS TIME AND DISCIPLINE

Resilience Research Production Over Time (Years)

Decade	Production
<1970-9	42
1980-9	31
1990-9	175
2000-9	858
2010-9	6,350
>2020	17,128

Discipline of Top-Cited Papers Across Decades

Psychology (26)
Systems ecology (16)
Business mgmt. (5)
Engineering / materials (10)
Other (3)

Top-Cited Papers by Discipline and Decade

Decade	Discipline	Count
<1970-9	Biology	1
	Engineering / materials	7
	Systems ecology	2
1980-9	Engineering / materials	1
	Psychology	3
	Systems ecology	6
1990-9	Psychology	9
	Systems ecology	1
2000-9	Engineering / materials	1
	Human geography	1
	Psychology	5
	Systems ecology	3
2010-9	Business management	2
	Psychology	6
	Systems ecology	2
>2020	Business management	3
	Engineering / materials	1
	Psychology	3
	Systems ecology	2
	Urban studies	1

CHALLENGES AND LIMITATIONS

Infancy of AI tool capabilities
- Rate limits on queries and downloads
- Limited mass/bulk download options
- Farming only from certain databases
- Limited search/explore functions within apps
- Full texts not readily available

Complexity of text and file cleaning
- Different apps needed for each stage of cleaning

Inconsistency in database structures and metadata
- Same metadata not captured across databases
- Metadata inconsistently entered / maintained

Databases are not designed for the academic text corpus as a big data source. "Nobody could ever read that much."

KEY TAKEAWAYS

Resilience is often still approached from **psychological** or **systems ecology** perspectives.

Resilience often involves **change related to adversity**, but also **progression** to a new (positive or improved) state, not necessarily to a *status quo*.
- Recovery **implies a shift** from a "pre-disaster" to a "post-disturbance" state.

Social resilience examined at a community level may be a **functional strategy** to bridge concepts from existing dichotomized perspectives.

Resilience could be framed across disciplines as **taking back control** through planning **before**, mitigation **during**, and progressing **after** an adverse event.

For more information on source code, data cleaning processes, search terminology, and other procedural details, **scan the QR code** to view our GitHub:

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